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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/734,523	12/11/2000	Robert J. Collins	RS001US	4627

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EXAMINER	
JONES, SCOTT E	
ART UNIT	**PAPER NUMBER**
3713	

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/734,523	COLLINS, ROBERT J.	
	Examiner	Art Unit	
	Scott E. Jones	3713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *124-129,134-137,141 and 143* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *124-129,134-137,141 and 143* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 December 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to the request for continued examination and amendment filed on November 29, 2004 in which applicant amends claims 124-129, 134-137, 141, and 143, cancels claims 130-133, 138-140, and 147-150, and submits a statement that the prior art does not teach the invention. Claims 124-129, 134-137, 141, and 143 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 29, 2004 has been entered.

Specification

3. The disclosure is objected to because of the following informalities:

- On page 22, line 21, "self" should be changed to "shelf".

Correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 124-129, 134-137, 141, and 143 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teder (U.S. 5,700,204) in view of Mihran (U.S. 6,244,971).

Teder discloses an apparatus and method for determining parameters of motion regarding a struck projectile (golf ball). Teder utilizes a Doppler microwave speed sensor to measure the apparent speed of a struck golf ball, along with determining other parameters relating to the projectile. Doing so allows Teder to determine the launch parameters or trajectory of an object, such as, a golf ball. Teder additionally discloses:

Regarding Claims 124, 128, 129, 134, 137, and 141:

- reflecting electro-magnetic energy from a plurality of transmission paths off the object for at least a portion of the object's initial movement path section upon being struck (Abstract, Column 10, lines 12-43, Column 20, line 9-Column 21, line 48, and Figs. 1, 4, and 16);
- receiving the electro-magnetic energy reflected off the object from each of the plurality of transmission paths (Abstract, Column 10, lines 12-43, Column 20, line 9-Column 21, line 48, and Figs. 1, 4, and 16);
- determining a multiple dimensional velocity vector for the object based on the reflected electro-magnetic energy received from each of the plurality of transmission paths (Figures 6 and 7, and Column 12, lines 24-60). Teder discloses using the actual path of the ball, rather than the straight-line path, in order to calculate a two-dimensional velocity vector.

Regarding Claims 127, 134, and 136:

- the object is a golf ball and the initial movement path section is located within several feet of the location where the object is struck (Column 8, lines 32-33, and Column 21, lines 45-48).

Although Teder teaches an alternative further embodiment would include some means of sensing the rate of spin and axis of spin of the ball, Teder lacks explicitly disclosing:

Regarding Claims 124, 134 and 141:

- determining the spin rate of the object based on the reflected electro-magnetic energy received from each of the plurality of transmission paths;
- determining the spin axis orientation of the object based on the reflected electro-magnetic energy received from each of the plurality of transmission paths; and
- determining the projected trajectory of the struck object based on the determined multiple dimensional velocity vector, determined spin rate, and determined spin axis orientation.

Regarding Claims 125 and 135:

- applying an electromagnetic contrasting mark to the object.

Regarding Claim 126:

- applying a symmetrically shaped electro-magnetic contrasting mark to the object.

Regarding Claim 141:

- a symmetrically shaped area having an electro-magnetic contrast different from the ball remainder.

Regarding Claim 143:

- the plurality of areas have a circular shape.

Mihran, like Teder, teaches of a method and apparatus for determining characteristics about a struck projectile, such as a golf ball or baseball and is therefore analogous art. Mihran teaches it is desirable to determine the spin characteristics of a rotating object, including the object's total rate of spin (spin rate) and the axis about which the object is rotating (spin axis) in conjunction with the ball velocity and launch angle to accurately predict the trajectory followed by the golf ball after it has been struck with a golf club. Mihran, like Teder, also teaches of reflecting electro-magnetic waves off of a golf ball to determine flight characteristics, however, Teder's sensors/receivers send and receive signals non-parallel to the projected path of the golf ball, whereas, Mihran's sensor/receiver sends and receives signals parallel to the projected path of the golf ball. Mihran additionally teaches:

Regarding Claims 125 and 135:

- applying an electromagnetic contrasting mark to the object (Abstract, Figs. 3, 5, 7, Column 2, lines 42-52, Column 3, lines 15-20, and 58-61, Column 7, lines 9-31, Column 8, lines 13-26, and Column 10, lines 5-29).

Regarding Claim 126:

- applying a symmetrically shaped electro-magnetic contrasting mark to the object (Column 8, lines 13-26).

Regarding Claim 141:

- a symmetrically shaped area having an electro-magnetic contrast different from the ball remainder (Abstract, Figs. 3, 5, 7, Column 2, lines 42-52, Column 3, lines 15-20, and 58-61, Column 7, lines 9-31, Column 8, lines 13-26, and Column 10, lines 5-29).

Regarding Claim 143:

- the plurality of areas have a circular shape (Column 7, lines 11-15).

It would have been obvious to one having ordinary skill in the art, at the time of the applicant's invention, to incorporate the electro-magnetic contrast features and apparatus to determine the spin orientation (spin axis) and spin rate of Mihran in Teder. One would be motivated to use Mihran's contrasting marks in Teder to determine the spin orientation (spin axis) and spin rate because two or more symmetrical contrast areas on the ball increases the number of pulses generated while the transmitted radiation intersects the flight path of the ball. This is of particular advantage where the transceiver is of relatively low power with a limited sensing range because a greater number of pulses are obtained within the same portion of the ball's flight path. Furthermore, one would be motivated to do so because Teder specifically teaches a further embodiment would include some means of sensing the rate of spin of the ball to permit more accurate modeling of the flight of the ball over the entire trajectory and one would be motivated to determine the spin orientation (spin axis) in order to modify the trajectory computations to accommodate the resulting aerodynamic forces on the ball.

Response to Arguments

6. Applicant's arguments filed November 29, 2004 have been fully considered but they are not persuasive.

7. Applicant alleges none of the cited references alone or in combination teach determining a struck object's projected trajectory by determining a multi-dimensional velocity, spin rate, and spin axis of the object based on electro-magnetic energy reflected off the object from a plurality of paths and determining the object's projected trajectory based on these determinations. The examiner respectfully disagrees. Please see the rejection above. A new grounds of rejection is

provided because the examiner does not believe Teder adequately discloses determining a spin rate and a spin axis in Column 23, lines 25-35, however, the examiner asserts Teder provides a teaching for doing so.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott E. Jones whose telephone number is (571) 272-4438. The examiner can normally be reached on Monday - Thursday, 6:30 A.M. - 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571) 272-7147. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Scott E. Jones
Examiner
Art Unit 3713

sej